MANAGEMENT PROBLEMS AND OPPORTUNITIES

The goals and objectives for the Niangua River Watershed Inventory and Assessment were developed to address the problems and opportunities for conserving the aquatic resources within the watershed. The Missouri Department of Conservation's strategic plan, the Fisheries Division Operational Plan, Stream Areas Program Plan, and the Stream Access Acquisition Plan and the West Central Regional Management Guidelines indicate areas of future expanded resource management, public awareness, and access needs and helped guide development of this document.

The following text describes the management objectives and strategies in five major areas: water quality and quantity; habitat; biotic community; public awareness and recreational use; and data inventory and maintenance. Completion of these objectives will depend upon their status in overall Department, Division and Regional priorities and the availability of personnel and funds. Many of the objectives rely on interagency coordination.

GOAL I: PROTECT AND IMPROVE WATER QUALITY AND QUANTITY IN THE NIANGUA RIVER WATERSHED SO THAT ALL STREAMS ARE CAPABLE OF SUPPORTING NATIVE AQUATIC COMMUNITIES.

Status: Data were compiled for all known potential sources of water pollution in the watershed. Extensive water quality and biological monitoring were conducted for the UNAWP in the Upper Niangua Subwatershed. The beneficial uses and classifications of most third order and greater streams were evaluated, and numerous streams were recommended for upgraded classification in 1993 and 1996.

Pollution Sources

Objective I.1: Continue to identify potential pollution sources within the watershed and within the recharge areas of watershed springs; evaluate their potential impacts on water quality and aquatic communities, and implement management strategies to monitor the potential impacts and reduce these threats.

Pipelines

Problem/Opportunity: Pipelines in the vicinity of streams and other water bodies pose serious threats to water quality and aquatic life. Greater head pressure of pipelines increases the likelihood of ruptures at stream crossings. Exposure due to stream erosion, followed by corrosion or physical damage by flood debris, can increase this risk. Current policies are inadequate for protecting streams from pipeline accidents. Detailed maps are not readily available, buried pipelines are frequently not marked at stream crossings; pipeline companies are occasionally complacent about protecting and repairing pipelines; and 404 permits are frequently issued without identifying pipeline locations or with disregard for their presence.

- * Determine the locations of pipelines within the watershed and plot on 7.5 minute topographic maps.
- * Incorporate pipeline locations in a GIS database.

- * Check above for pipelines at all sites proposed for 404 activities or where 404 violations are reported.
- * Recommend new policies for controlling pipeline activities to MDNR and the COE to protect stream water quality.

Sewage Treatment Plants

Problem/Opportunity: Sewage treatment plants in Marshfield, Lebanon, and Conway are chronically discharging poorly treated wastewater to the watershed.

- * Encourage MDNR to monitor compliance with permit limitations, and comment on plans to upgrade these facilities.
- * Assure that receiving streams are appropriately classified for protection of aquatic resources.
- * Encourage Stream Teams to monitor sites below these facilities.

Sludge Application

Problem/Opportunity: Wastewater sludge stored in lagoons or applied to farmland can pose a threat to water quality. Application sites for municipal sludge seem to be adequately monitored by the MDNR and no problems have been reported in the Niangua Watershed. Private haulers have only recently been required to obtain licenses and file reports, so limited information is available. There are a large number of private treatment systems in the watershed, especially around LOZ, that depend on private haulers for sludge disposal. Locations of disposal sites within the watershed need to be determined.

- * Obtain records for private haulers from MDNR, create a database, and plot sites on 7.5 minute topographic maps.
- * Obtain annual reports each year and evaluate whether haulers are in compliance. Encourage compliance through MDNR.

Non-POTWs (Non-public owned treatment works)

Problem/Opportunity: There are large numbers of these systems in the LOZ area that handle considerable amounts of waste. They pose a significant threat to water quality if they are not monitored and properly maintained. The number of these systems is expected to increase with continuing development around the lake because many sites will not meet the requirements of the new regulations for conventional septic systems.

* Recommend strict permit review and compliance monitoring for these facilities by MDNR. Highlight this need in the LOZ Management Plan.

Animal Waste Point Source

Problem/Opportunity: Most of the permitted animal waste facilities in the watershed are relatively small dairies. However, there are at least one hog confinement facility and four fairly large poultry operations with a total human population equivalent of over 30,000. Facilities this large generate the waste equivalent to a small city, yet their waste handling and treatment systems are seldom comparable to the average municipal STP.

- * Encourage Stream Teams to monitor water quality and aquatic communities in the receiving streams below large facilities.
- * Support legislation that reduces potential pollution of the surface and groundwater resources from the application of poultry, hog, and cattle wastes .

Landfills

Problem/Opportunity: The Lebanon Sanitary Landfill occasionally discharges leachate to Goodwin Hollow, a losing stream that is hydrologically connected to Bennett Spring and Sweet Blue Spring.

* Recommend that the MDNR inspect this facility, and ensure maximum water quality protection.

Quarries

Problem/Opportunity: Discharges of excessively turbid stormwater runoff from settling basins at a limestone quarry near Buffalo are probably degrading the Niangua River within Niangua darter critical habitat. The MDNR has investigated this problem and has advised the owner to remove accumulated sediment from the basins.

- * Monitor turbidity and sediment accumulation in the NR below the quarry.
- * Request confirmation from the MDNR that remedial measures have been completed.

Septic Systems

Problem/Opportunity: Poorly designed and constructed septic systems and other individual treatment systems often contribute to elevated levels of nutrients in highly developed coves of LOZ.

- * Refer complaints about septic systems to County Wastewater Departments.
- * Support adoption of a "Lake Zone" for planning and zoning in surrounding lake counties.

Agricultural Runoff

Problem/Opportunity: Wastewater of greater than 300 animal units from dairies and poultry and hog confinement facilities are regulated by the MDNR as point sources. They must meet minimum standards, and operations within the watershed appear to be gradually coming into compliance. Livestock in pasture are non-point sources that are less tangible and may represent a considerable source of contaminants. The amount of stream contamination can be reduced by good pasture management, erosion control, and providing filter strips in riparian corridors.

- * Promote good pasture management, erosion control, revegetation of corridors, and livestock exclusion throughout the watershed.
- * Offer PFW and new Streams For The Future cost share incentives for projects within the targeted LNR watershed.
- * Cooperate with NRCS to implement alternative water systems incentive agreements throughout the watershed.
- * Utilize other state and cost share programs such as AgNPS, EQIP, WHIP, and CRP to address

non-point agriculture pollution problems in the watershed.

Water Quality Monitoring

Objective I.2: Ensure that water quality and aquatic communities are monitored adequately to provide early detection of stream and lake degradation and to evaluate possible effects of watershed and stream improvement projects.

Problem/Opportunity: Water quality monitoring during the UNAWP indicated that high levels of nutrients and pathogens were occasionally present at most monitoring stations. It was estimated that construction of animal waste treatment facilities reduced nutrient input from these sources to the NR by 20% during the project. Even so, no significant improvements were detected in water quality, fish communities, or invertebrate communities during the first four years of the five year project (Smale et al., 1995). Efforts to secure funding for continued water quality monitoring have not been successful. Two sites within the project area (G006, G012) may be monitored occasionally by the NAWQA project (USGS).

- * Review the final UNAWP report when completed.
- * Support continued water quality monitoring efforts in the Upper Niangua Subwatershed to document improvements from animal waste treatment facilities installed by the UNAWP and from continuing efforts to reduce agricultural runoff.
- * Encourage Stream Teams to adopt strategic sampling sites in the Upper Niangua Watershed.

Fish Kills

Problem/Opportunity: Several fish kills have been documented in the watershed. Most have been associated with municipal sewage discharges from the Marshfield sewage treatment plant.

- * Assist state and federal agencies with enforcement of water pollution laws by cooperating with pollution and fishkill investigations.
- * Cooperate with MDNR to minimize future threats from the Marshfield STP and other municipalities within the watershed and spring recharge areas.

Fish Contamination

Problem/Opportunity: Although no Niangua Arm (LOZ) samples have yielded action levels of contaminants, some Osage Arm (LOZ) paddlefish samples showed elevated chlordane levels.

- * Initiate collection of redhorse suckers from the NR in 1999 for contaminant analysis by MDH; sample at Bennett Spring Branch and Leadmine CA in 1999, then alternate sites in subsequent years.
- * Continue to collect LOZ fish for contaminant analysis by MDH including fish from the Niangua Arms every other year.
- * Cooperate with MDH in informing the public about health advisories and the impacts of fish contamination.

Beneficial Use Attainment

Objective I.3: Evaluate all classified streams to assure that appropriate beneficial uses are being attained and recommend upgraded classifications as necessary.

Problem/Opportunity: Some third-order streams in the watershed remain unclassified andother streams may qualify as cool-water fisheries.

* Identify appropriate classifications and beneficial uses for remaining unclassified streams and recommend upgraded classification to MDNR.

Problem/Opportunity: Efforts to protect Niangua darter habitat with a special classification have failed to win Clean Water Commission approval. Classification could be used to require stricter limitations in NPDES Permits that discharge to streams within critical habitat. "Outstanding State Resource" classification would also provide better protection for these streams.

* Propose, once again, that Niangua darter known range be given special classification "Critical Habitat for Rare and Endangered Aquatic Species," or alternatively, "Outstanding State Resource."

Problem/Opportunity: Bennett Spring and Ha Ha Tonka Spring are among the largest springs in the state and both are featured resources at state parks. Recent MDNR dye tracings and geological investigations have established extensive recharge areas for these springs and this assessment has identified numerous water quality threats within them.

- * Propose special classification for Bennet Spring and Ha Ha Tonka Spring and the losing streams within their recharge areas.
- * Propose that the Spill Emergency Plan for Bennett Spring State Park be approved.

Objective I.4: Promote programs that enhance groundwater recharge in the watershed and spring recharge areas.

Springs

Problem/Opportunity: Springs are the main source of sustained flow in streams during periods of low precipitation. Since aquatic communities can experience great stress under these conditions (low dissolved oxygen and high temperatures), adequate flow and good water quality are essential. Springs in the watershed have not been monitored sufficiently to determine current conditions or detect change over time.

- * Compile existing data on springs within the watershed.
- * Cooperate with the USGS and MDNR to develop a plan to monitor strategic springs.

Watershed Projects

Problem/Opportunity: The amount of rainfall that percolates through the soil to recharge aquifers and maintain base flows is affected by land use and the amount of vegetation. Ungrazed, uneven-aged, woodland allows optimal percolation, and well managed pastures improve the quality of runoff events.

* Promote watershed practices that improve groundwater recharge, including cattle exclusion from woodlands, good pasture management, timber stand improvement, and conversion of pasture and open fields to woodland.

Water Quantity

Objective I.5: Support the enactment of a State Water Law and other legislation that will prevent negative downstream impacts from single or cumulative withdrawals.

Problem/Opportunity: Since there is no water law in Missouri, downstream users and government agencies have little recourse to regulate upstream water users and prevent them from withdrawing water that may impact aquatic organisms.

- * Cooperate and support MDNR in preparing a Missouri Water Law which restricts water removal from streams for crop irrigation and other uses.
- * Work with MDNR and COE, to protect or enhance stream flows through oversight and enforcement of existing water withdrawal permits.

GOAL II: PROTECT AND IMPROVE AQUATIC HABITAT CONDITIONS OF THE NIANGUA RIVER WATERSHED TO MEET THE NEEDS OF NATIVE AQUATIC SPECIES WHILE ACCOMMODATING SOCIETY'S DEMANDS FOR WATER AND AGRICULTURAL PRODUCTION.

Objective II.1: Insure that instream projects within the watershed do not interfere with natural stream processes.

Channel Alterations

Problem/Opportunity: Many landowners still believe that channelization is an appropriate solution to bank erosion and flooding problems. Although some short-term reduction in bank erosion may be achieved, the negative side effects can be severe, including loss of habitat diversity, accelerated upstream and downstream erosion, headcutting upstream, and channel destabilization.

- * Meet with landowners who propose channelization projects to discuss their concerns and inform them about stream processes and the negative impacts of channel alterations, and recommend more appropriate remedies.
- * Disseminate MDC literature and other information that describe theoffers alternative techniques to channelization.

404 Activities

Problem/Opportunity: A large number of Section 404 applications for instream construction and excavation are submitted for streams within the Niangua Watershed. Since a large portion of Niangua darter habitat occurs in the watershed, MDC reviews many of these.

- * Review all 404, gravel excavation, bridge construction and other development projects that may impact streams and recommend appropriate action to maintain, improve or protect aquatic habitats.
- * Recommend denial of 404 permits that require repeated stream crossing or recommend conditions that include installation of a temporary crossing under MDC supervision.
- * Encourage Stream Teams to comment on 404 permits.

Problem/Opportunity: The general permit for sand and gravel removal (GP-34) has greatly simplified the application and approval process for applicants, the COE, the MDNR, and MDC. Unfortunately, it has also reduced a very important component which has been beneficial in the past, direct contacts with landowners and permittees. These contacts provide opportunities to inform the interested parties about stream processes and the meaning and justification for the permit conditions; learn about their experiences, techniques, and concerns; and otherwise establish a cooperative, mutually beneficial relationship. In addition, greater involvement provided opportunities to make site visits and document pre-permit conditions, monitor compliance, and observe possible impacts. Now, when a general permit is issued, the MDC is usually not consulted and frequently the COE makes no site inspection. Nationwide permits are usually issued with inadequate conditions to protect aquatic resources and without MDC input.

- * Review 404 applications and inspect proposed sites whenever possible.
- * Encourage the COE to provide opportunities for regional fisheries personnel to comment on 404 applications that include requests for variances, crossing streams, or channelization including those in NWP segments.
- * Recommend that MDC Policy Coordination request changes in procedures to COE General and Nationwide Permits. Include careful scrutiny of locations of proposed activities, onsite inspections where violations

have occurred, and MDC notification of proposed activities.

Objective II.2: Determine minimum flows necessary to sustain native communities of fish and other aquatic life, and to provide adequate spawning habitat for white bass, walleye, and other species.

Problem/Opportunity: Truman Dam prevents migration of LOZ white bass, walleye, paddlefish and other species to historic spawning sites upstream. White bass spawn in the Niangua River and Little Niangua River. While some walleye may spawn in both rivers, it is doubtful that they contribute to annual recruitment in LOZ. Neither river provides suitable spawning conditions for paddlefish.

- * Conduct fish sampling and spawning habitat assessment on the Niangua River and the Little Niangua River for walleye; follow-up on results of the current research project on white bass.
- * Develop recommendations for maintaining adequate flows for white bass and walleye using approved instream flow methodologies as recommended by Fisheries personnel. Such flows might also enhance paddlefish migration and susceptibility to anglers.

Problem/Opportunity: MDC is required to monitor the new USGS gage at Tunnel Dam to insure that minimum flows required by the recent relicensing agreement are sustained. Recent data indicate that over a one-year period through December 4, 1996, minimum required flows were not sustained 31% of the time. During the spawning season (March 15 through June 15), mean daily flows were below the required minimum flow of 60 cfs 55% of the time.

- * Inform Show-Me Power Corporation and FERC of non-compliance and assure that minimum flows are attained.
- * Monitor flows to assure compliance by obtaining data periodically from the USGS.

Objective II.3: Implement habitat improvement projects on public and private land.

Habitat Improvement Projects on Private Land

Problem/Opportunity: Riparian corridors are in poor condition on many watershed streams and cattle frequently have access to corridors and streams. The vast majority of stream frontage in the watershed is in private ownership.

- * Implement landowner incentive programs through existing or new state or federal incentive program or assist county SWCDs to obtain federal or state grant money through: 319 Environmental Protection Agency grants, Rural Clean Water Program, Water Quality Improvement Practices (WQIP), AgNPS projects and MDC stream incentive programs.
- * Develop landowner cooperative projects (LCPs) on the LNR. Target the LNR watershed for promoting cost shares.
- * Promote the adoption of streambank erosion control and riparian corridor establishment or protection practices for approval by the county Agriculture Executive Committee of FSA or the SWCD administered through the MDNR Soil and Water Conservation Program.
- * Encourage landowners and urban residents to form their watershed committees.
- * Provide technical assistance and information to all landowners who request assistance and on-site consultation to those willing to establish and maintain stream corridors guidelines.

Problem/Opportunity: The three-year pilot stream incentive program in Dallas County, the recently initiated PFW project, and increased cooperation with NRCS to install alternative water systems, have stimulated interest in stream improvement in the watershed. Promotional and educational efforts are necessary to inform landowners about these programs and encourage participation.

- * Promote and advertise stream improvement projects on Department areas and LCPs for demonstration purposes using Neighbor to Neighbor or SWCD Field Day events.
- * Advertise and promote available stream habitat cost have programs through traditional and agricultural media; emphasize word-of-mouth advertising by neighbors.
- * Sponsor a stream and watershed workshop for landowners, NRCS, FSA, COE, and city and county officials which highlights problems and strategies for correcting them.
- * Increase landowner awareness of MDC private stream programs through SWCD and Farm Bureau cooperative programs at the county level. Emphasize the economic benefits of well-managed streams.
- * Cooperate with the MDC Outreach and Education Division to develop stream habitat improvement materials for use by local Vocational Agricultural instructors, FFA chapters, and 4-H clubs.

Habitat Improvement Projects on Public Lands

Problem/Opportunity: Area Plans are prepared periodically for MDC conservation areas.

* Inspect these areas and recommend corridor expansion or bank stabilization projects as necessary to correct problems and serve as demonstrations sites.

* Include monitoring and habitat improvement strategies for streams on these areas to correct problems.

Problem/Opportunity: The newly acquired Barclay Springs CA is in the beginning stages of planning and development. This diverse area encompasses 389 acres with 1.7 miles of Niangua River frontage and a sizeable spring that provides an excellent opportunity for managing these aquatic resources.

* Inspect this area and recommend corridor expansion, bank stabilization projects, and fish habitat improvements to correct problems and serve as demonstrations sites.

Problem/Opportunity: Several habitat improvement projects have been completed at Bennett Spring State Park, Leadmine CA, and Mule Shoe CA. Since these serve as highly visible demonstration sites for effective stream improvement practices, they should be carefully monitored and properly maintained.

- * Continue to monitor these projects and complete maintenance as necessary.
- * Use these projects to demonstrate good stream management to the general public and agency personnel as appropriate.

Unique Habitat

Objective II.4: Identify and protect unique habitat in the watershed

Problem/Opportunity: Very little high quality bottomland forest was identified in the Natural Features Inventory of the Niangua Watershed. This is the result of one or more of the following common practices: clearing of bottomlands up to the stream edge; allowing cattle to graze the intact forests; and repeated logging of forests. These forest are important and necessary components of the stream ecosystem. They provide essential habitat, help prevent streambank erosion, filter surface runoff and groundwater flow, reduce water temperatures by shadingstreams, and contribute woody debris and organic matter.

* Encourage Little Niangua River landowners with bottomland forests or sites naturally suited for bottomland forests to protect and manage them.

Problem/Opportunity: Very few high quality wetlands were identified in the Natural Features Inventory. Wetlands were probably always a scarce resource in the watershed historically and many have been developed for pasture or cropland.

- * Identify, protect, and enhance wetland habitat through purchases, easements, LCPs, PFW, or other agreements.
- * Recommend wetland creation at suitable sites on public lands.
- * Implement management strategies outlined in the MDC Guidelines for Promoting Fishery Resources in Missouri Wetlands on all public areas and privately owned wetlands.
- * Assist the West Central Region Wildlife personnel with workshops for other agency staff and landowners on the importance of managing wetlands for fish and other aquatic organisms.
- * Assist West Central Region personnel with workshops for loggers and landowners regarding proper methods of logging timber from riparian corridors and bottomland forests.

Problem/Opportunity: Two of the eight extant Niangua darter populations occur in the watershed.

Habitat degradation is apparently still negatively impacting the Niangua darter. Nutrification and sedimentation are believed to be the most serious threats to the darter, as well as the rest of the natural fauna.

- * Support continued habitat and water quality monitoring efforts in the Upper Niangua and Little Niangua subwatersheds.
- * Encourage Stream Teams to adopt monitoring sites in Niangua darter range.
- * Identify, protect, and enhance Niangua darter habitat through purchases, easements, LCPs, PFW, or other agreements. Highlight expansion priorities identified in the Mule Shoe CA draft area plan.

Habitat Assessment

Objective II.5: Inventory aquatic habitat throughout the watershed to provide descriptions of habitat conditions in representative reaches and quantify various parameters for comparisons between subwatersheds and with other Missouri watersheds.

Problem/Opportunity: Insufficient numbers of SHADs were conducted to adequately characterize the entire watershed. Most of the SHADs were completed in 1991, so it would be desirable to repeat them if surveys are conducted at additional sites. The Habitat Assessment Committee investigated possible alternatives to the SHAD that would provide more useful quantitative data from a watershed wide perspective. Analyses of remote sensing data, including aerial photography, digital orthophotography, and satellite imagery, are promising alternatives, however, current data on a sufficiently large scale is not readily available. A method for evaluating riparian corridors has been developed by Tom Groshens (MDC), using aerial photographs. Photographs were on hand for only a small portion of the watershed, so this method was not pursued for this plan. Another emerging method is digital image analysis of high quality helicopter videos or low altitude digital photographs.

- * Implement the habitat assessment methodology recommended by the habitat assessment committee for streams within the watershed.
- * Incorporate site specific habitat observations on all Niangua darter snorkeling trips.

GOAL III. MAINTAIN THE DIVERSITY AND ABUNDANCE OF AQUATIC COMMUNITIES AND IMPROVE THE QUALITY OF THE SPORT FISHERY.

Objective III.1: Protect and improve the status of threatened and endangered species, and implement state or federal recovery plans.

Problem/Opportunity: Niangua darter populations appear to be fairly stable in the Little Niangua River but declining in the upper Niangua River. Sampling in both subwatersheds needs to be expanded and compared to Mattingly's (UMC) sampling on the Little Niangua River. Although limited targeted sampling was conducted, thorough community sampling of the Upper Niangua River by Smale during the UNAWP failed to yield Niangua darters. No thorough, comparable survey has been conducted throughout Niangua darter range since Pflieger's in the 1970s and recent sampling procedures have been inconsistent.

* Conduct a thorough search of the Upper Niangua River for the Niangua darters distribution.

- * Recommend to the MDNR that all known range of the Niangua darter be classified as "Critical Habitat for Rare and Endangered Aquatic Species," or failing that, as "State Outstanding Resource Waters."
- * Conduct a multi-district survey of known range to evaluate current status and consider elevation of federal status to "Endangered."
- * Target the Little Niangua River watershed for intensive promotion of stream incentive programs and SSA.
- * Identify, protect, and enhance Niangua darter habitat through purchases, easements, and cost shares. Highlight expansion priorities of the Mule Shoe CA draft area plan, as per Objective II.4.
- * Carry out recommendations in the Niangua Darter Recovery Plan and actively participate on the Niangua Darter Recovery Team.
- * Adopt a standardized monitoring plan for Niangua darters and maintain a statewide database.

Problem/Opportunity: The bluestripe darter is only found in a few streams in the Missouri Ozarks and appears to be declining in the watershed. Its status in other watersheds is unknown.

* Inform the USFWS, MDC Natural History, and other MDC Regions within historic range of the bluestripe darter of its apparent decline in the Niangua River Watershed and consider elevating its state and federal status.

Objective III.2: Maintain the diversity and abundance of fishes and invertebrates at or above current levels.

Problem/Opportunity: Thorough fish community samples have not been conducted in the Lower Niangua River Subwatershed or the Little Niangua River Subwatershed since Pflieger's surveys in the mid 1970s.

* Conduct periodic, thorough fish community sampling at historic collection sites in both subwatersheds.

Problem/Opportunity: Comprehensive invertebrate sampling has not been conducted in the Lower Niangua Subwatershed or Little Niangua River Subwatershed since the mid 1970s. Thorough collections were completed during the UNAWP from 1991-1995 in the Upper Niangua Subwatershed.

* Encourage Stream Teams to assist with sampling.

Problem/Opportunity: A diverse mussel community historically occupied the watershed. In consideration of mussel decline throughout the Midwest and the lack of recent watershed sampling, a thorough mussel survey is warranted.

* Conduct a mussel survey of all fifth-order and greater streams in cooperation with the statewide mussel survey that Fisheries Research will be conducting.

Problem/Opportunity: The Niangua and Little Niangua Rivers offer opportunities for producing high quality fisheries.

* Identify and prioritize the native sportfish most suitable for increased management emphasis in the Niangua River and implement a plan for sampling.

- * Give special consideration to a special smallmouth bass management area on the Niangua.
- * Assess the impacts of Tunnel Dam and Lake Niangua on sportfish populations, .
- * Continue the Special Management Area for brown trout in the Niangua River by annual stocking of 10,000 ten-inch brown trout with special harvest regulations.
- * Continue to serve on the Bennett Spring Management Task Force.
- * Continue to manage Bennett Spring State Park as a "put and take" rainbow trout fishery.

Problem/Opportunity: Management actions targeting one or more game species can have unexpected negative impacts on non-game fishes and invertebrates. Several listed rare, threatened, and endangered species are found in limited number in the watershed.

- * Evaluate the potential impacts of sportfish management activities on non-game fishes and invertebrates before and after implementation.
- * Avoid special management areas in designated critical habitat for state or federally listed rare, threatened or endangered species.

Problem/Opportunity: The Niangua and Little Niangua rivers are important components of the fisheries and aquatic ecosystems of LOZ.

- * Implement all strategies of the LOZ Management Plan and this plan so they compliment one another.
- * Be aware of problems which arise in LOZ which may negatively impact the Niangua and Little Niangua rivers (exotic species introductions; distributional changes of zebra mussels or spined water fleas; etc.)

GOAL IV. INCREASE ACCESS AND MDC OWNERSHIP WITHIN THE NIANGUA WATERSHED

Objective IV.1: Provide additional MDC owned access to the Niangua River between Bennett Spring and the Camden County line.

Problem/Opportunity: There is a demand for at least one stream access on the lower Niangua River to increase user convenience and encourage more uniform use throughout the watershed.

- * The recently purchased Barclay Springs CA will provide additional access upstream from the Lead Mine CA. An additional access between Leadmine CA and Lake Niangua is recommended.
- * Priority should be given to land acquisitions in the Niangua Watershed that include stream frontage for access development and corridor protection/development.

Objective IV.2: Enhance accessibility at all MDC access and frontage areas within the watershed.

Problem/Opportunity: Area Plans have been or are being developed for five stream areas. There are no disabled user facilities at MDC stream areas in the watershed.

* Include public use objectives, including some disabled user facilities, in MDC area plans for public lands along streams in the watershed.

Objective IV.3: Implement expansion plans as outlined in MDC area plans; focus on key expansions at Mule Shoe CA and Leadmine CA.

Problem/Opportunity: Area Plans have been or are being developed for several stream areas.

* Highlight expansion needs and stress the need to fund these expansion areas.

Objective IV.4: Work with other divisions and agencies to address problems associated with increased public use in the watershed.

Problem/Opportunity: There has been a significant increase in canoeing, rafting, tubing, and kayaking on the Niangua River in recent years. Litter, noise, and controlled substance violations have also increased. Owners of boat liveries and campgrounds have complained about these problems and may be cooperative allies for planning management actions.

* Cooperate with MDC Protection Division to organize a task force to develop an action plan to address these problems. Include the Missouri State Water Patrol, MDNR, and local sheriff departments on the task force.

GOAL V: ADDRESS INFORMATION AND EDUCATION OPPORTUNITIES WITHIN THE WATERSHED.

Objective V.1: Inform other agencies, local government officials, land developers, landowners, and the general public of water quality conditions and problems in the watershed.

Problem/Opportunity: Sound watershed management depends on our ability to increase public awareness and educate the general public, landowners, city and county officials, and industrial and residential developers on the importance of improving water quality, and generate an interest in water quality problems and solutions.

- * Include the Niangua Watershed as a high priority for private landowner assistance within the West Central Region Private Land Plan.
- * Coordinate private landowner assistance with Agricultural Services, NRCS, FSA, The Nature Conservancy, COE and MDNR to cultivate mutual interests and concerns for land and stewardship issues.
- * Incorporate information on Best Management Practices into MDC stream management workshops presented to local SWCDs, private industry, city and county governments and other agencies.
- * Attend public meetings regarding highway construction, development projects, 404 permits, and state or federal watershed projects to inform the public about local water quality and watershed issues and the importance of reporting all pollution incidents to the MDNR and MDC.
- * Write articles for local newspapers, Farm Bureau, University Extension, local SWCD, NRCS, and FSA newsletters, and conduct radio or TV programs concerning proper land use and local water quality problems and solutions.
- * Work with MDC Outreach & Education Consultants to incorporate information into teacher workshops concerning watershed and stream issues, particularly the need to promote advocacy of these resources and the importance of local citizen involvement to solve local problems by forming Stream Teams.

- * Seek opportunities to involve citizens and organizations in planning activities.
- * Publicize the acquisition, development and opening of new public access sites.
- * Promote the adoption of watershed streams by Stream Teams.
- * Promote the education of youth in the watershed by coordinating aquatic education opportunities for schools in the watershed with MDC Outreach & Education Consultants.
- * Write a Missouri Conservationist article on the PFW project.
- * Produce a video promoting the resources and public use opportunities, and stream ecology and preservation in the watershed.
- * Emphasize stream ecology, good stream stewardship and the MDC Streams for the Future program (using watershed models and the stream trailer where applicable) during presentations at adult and youth organizations, adult service clubs and sportsman's groups, Boy Scouts of America, Girl Scouts of America, Future Farmers of America, 4-H and Vo Ag youth groups, schools in the watershed, and fairs or other special events.
- * Promote stream ecology in MDNR (Ha Ha Tonka, Bennett Spring and LOZ state parks) brochures and at their visitor centers.
- * Promote the adoption of this plan by the Missouri Department of Natural Resources Non-point Pollution Program responsible for writing watershed plans for the state of Missouri.
- * Include questions on water quality, water quantity, habitat conditions, biotic community access and public awareness issues in telephone or mail surveys to the public residing in the watershed.
- * Incorporate these goals and objectives into the Regional Management Guidelines.
- * Enhance awareness among all resource and government agencies by providing copies of this inventory and assessment to MDNR offices at Ha Ha Tonka, Bennett Spring and LOZ state parks; U.S. Army Corps of Engineers in Kansas City and the project office in Warsaw; the USFWS office in Columbia; SWCD, NRCS and FSA offices in Benton, Camden, Dallas, Hickory, Laclede, and Webster counties; MDC employees who work in the Niangua River Watershed; Environmental Protection Agency, The Nature Conservancy, USGS, city and county officials, state and federal legislators, and county libraries.
- * Provide copies of this plan to Stream Teams within the watershed.
- * Keep Stream Teams informed about water quality problems and other significant stream issues.
- * Include this inventory and assessment on the MDC watershed web page.

GOAL VI. MANAGE NIANGUA RIVER WATERSHED DATABASES TO PROVIDE ACCURATE AND UP-TO-DATE DATA, EASY ACCESSIBILITY, AND COMPATIBILITY WITH OTHER DISTRICTS, DIVISIONS, AND AGENCIES.

Objective VI.1: Organize watershed databases to improve accessibility and compatibility.

Problem/Opportunity: Numerous databases were created and a large amount of data were compiled

during the inventory for this plan. These databases must be readily accessible for general use and updating. They should also be compatible with those of other regions, divisions, and agencies to facilitate exchange of data.

- * Prepare documentation for all watershed databases.
- * Insure that watershed databases are compatible with comparable statewide databases.
- * Incorporate these data into MoRAP and the Statewide Resource Assessment and Monitoring Plan.

Objective VI.2: Update watershed databases periodically to include the most current, accurate information.

Problem/Opportunity: Many of the watershed databases must be updated periodically to include the most recent data (e.g., 404 permits, fish collections). MoRAP is coordinating data preparation and maintenance of some databases throughout the state to increase compatibility and efficiency.

- * Develop a plan for updating watershed databases periodically.
- * Cooperate with MoRAP to improve database compatibility between agencies.